

IN THE DRAWINGS

Corrected drawings are supplied herewith. In particular, copies of Figures 1A, 1B and 1C providing clearer illustration of the example and emulated angiograms are provided with this response.

REMARKS

This responds to the Office Action dated November 28, 2006, and the references cited therewith.

Claims 1, 3-4, 17, 18, 20-21, 31-32, 40, 42-43, 56 are amended, no claims are canceled, or added; as a result, claims 1-56 remain pending in this application. The amendments to the claims address minor typographical errors and are not in response to an art based rejection or other reason related to patentability.

Claim Objections

Claims 1-28, 31-32 and 40-56 were objected to for informalities. In particular, in claims 1, 18, and 40, “the blood vessel data” lacked antecedent basis. Applicant has amended claims 1, 18 and 40 to remove “the”, thereby overcoming the rejection.

In claims 3-4, 20-21, 31-32 and 42-43, “the first color table and is a monochrome color table” should have been “the first color table is a monochrome color table”. Applicant has amended claims 3-4, 20-21, 31-32 and 42-43 as suggested in the Office Action

In claims 17 and 56, the claim should have ended in a period instead of a colon. Applicant has amended claims 17 and 56 as suggested in the Office Action.

§102 Rejection of the Claims

Claims 1, 18, 29 and 40 were rejected under 35 U.S.C. § 102(b) for anticipation by Kaufman et al. (U.S. Patent Application Publication No. 2001/0031920). Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. *In re Dillon* 919 F.2d 688, 16 USPQ 2d 1897, 1908 (Fed. Cir. 1990) (en banc), cert. denied, 500 U.S. 904 (1991). It is not enough, however, that the prior art reference discloses all the claimed elements in isolation. Rather, “[a]nticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*” *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220

USPQ 193 (Fed. Cir. 1983)) (emphasis added). Applicant respectfully traverses the rejection and submits that the Office Action did not make out a *prima facie* case of anticipation because the claims contain elements not found in Kaufman.

For example, claim 1 recites “maintaining a first set of values for a rendering characteristic and a second set of values for the rendering characteristic” The Office Action asserts that Kaufman, at paragraphs 173-174 discloses the recited language. Applicant respectfully disagrees with this interpretation of Kaufman. As correctly stated in the Office Action, Kaufman discloses “one or more defined transfer functions to map different ranges of sample values of the original volume data to different colors, opacities and other displayable parameters.” Thus rather than maintaining a first set and a second set of values, Kaufman discloses mapping values using transfer functions. The mapping functions appear to be executed when the image is rendered, there is no teaching or disclosure of having two sets of values maintained and available when the image is rendered. Thus Kaufman fails to disclose each and every element of claim 1. Therefore Kaufman fails to anticipate claim 1. Applicant respectfully requests reconsideration and the withdrawal of the rejection of claim 1.

The Office Action stated that claims 18, 29 and 40 contained similar elements and were rejected for the same reasons as claim 1. Applicant respectfully submits that claims 18, 29 and 40 are allowable for the same reasons as discussed above with respect to claim 1.

Claims 1, 16-18, 29, 40 and 55-56 were rejected under 35 U.S.C. § 102(b) for anticipation by Hall (“A complete simulation of x-ray angiography,” *Proceedings of the Spie—The International Society for Optical Engineering*, 3338 (Feb. 1998), pp. 1064-1075). Applicant respectfully traverses the rejection because the claims contain elements not found in Hall. With respect to claims 1, 18, 29 and 40, the Office Action merely quotes generalized statements from Hall. For example, the Office Action states that Hall discloses “loading 3-D image data, segmenting the data, and rendering blood vessels” by quoting Hall at pages 1064 where it is stated “the reconstruction algorithm is premised on an ability to automatically segment places where vessels appear to branch or cross” and page 1065 where it is stated that “Ray-tracing may be used to render voxel data setsOur rendering method can be generalized to cope with general CSG models.” Applicant notes that nowhere in the cited statements or in Hall as a whole

is it disclosed that a first and second set of values for a rendering characteristic may be maintained and used to render segmented and non-segmented data to emulate an angiogram as recited in claims 1, 18, 29 and 40. Thus Hall fails to disclose each and every element of Applicants claims 1, 18, 29 and 40. Applicant respectfully requests reconsideration and the withdrawal of the rejection.

Claims 16-17 depend either directly or indirectly from claim 1 and claims 55-56 depend either directly or indirectly from claim 40. These dependent claims inherit the elements of their respective base claims and are not anticipated by Hall for at least the reasons discussed above regarding claims 1 and 40.

§103 Rejection of the Claims

Claims 2-13, 19-28, 30-39 and 41-52 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaufman et al. (U.S. Patent Application Publication No. 2001/0031920) in view of Saito et al. (U.S. Patent No. 6,826,297). In order for the Examiner to establish a *prima facie* case of obviousness, three base criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir. 1991)). Applicant respectfully traverses the rejection because the claims contain elements not found in the combination of Kaufman and Saito.

For example, claim 2 recites that the first and second set of values maintained are color tables. Applicant notes that as argued above, Kaufman does not maintain two sets of values, rather Kaufman maps values. In any case, the Office Action correctly notes that Kaufman does not disclose the use of a first and second color table. However, The Office Action attempts to make up for the deficiency in Kaufman by asserting that color tables 104 in Saito teach the recited language. Applicant respectfully disagrees with this interpretation of Saito. The color tables 104 of Saito are not directly used for "rendering the non-segmented data using the first set

of values for the rendering characteristic and rendering the segmented blood vessel data using the second set of values for the rendering characteristic.” Rather, the values from the color tables are mapped onto parameter sets for various objects. These parameter sets and not the color tables 104 are used to display objects (see column 8, lines 16-52). Thus neither Kaufman nor Saito, alone or in combination, disclose each and every element of claim 2. Applicant respectfully requests reconsideration and the withdrawal of the rejection of claim 2.

Claims 3-6 and 8-11 depend from claim 2 and are patentable over Kaufman and Saito for the reasons argued above, and are also patentable in view of the additional elements which they provide to the patentable combination. If a claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is also nonobvious. MPEP § 2143.03.

With respect to claim 7, the Office Action states that “the user can select one color for one object and the inverted color for the background object.” The Office Action does not specify any section of Saito where it is taught or suggested that an inverted color may be used in a second color table. Applicant has reviewed Saito and can find no teaching or suggestion of using inverted colors in a first and second color table. Thus the combination of Kaufman and Saito fails to teach or suggest each element recited in claim 7. Applicant respectfully requests reconsideration and the withdrawal of the rejection of claim 7.

Claims 12 and 13 depend from claim 1 and therefore inherit the elements of claim 1. As argued above, neither Kaufman nor Saito teach or suggest maintaining two sets of values that are used to render segmented and non-segmented data. Rather, both Kaufman and Saito use various forms of mapping values rather than maintaining two sets of values. As a result, neither Kaufman nor Saito, alone or in combination, teach or disclose each element of claims 12 and 13 as inherited from claim 1. Applicant respectfully requests reconsideration and the withdrawal of the rejection of claims 12 and 13.

Claims 19-28, 30-39 and 41-52 were stated to have similar limitations and were rejected for the same reasons as claims 2-13. Applicant respectfully submits that claims 19-28, 30-39 and 41-52 are allowable for at least the reasons discussed above with respect to claims 2-13.

Claims 14-15 and 53-54 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaufman et al. (U.S. Patent Application Publication No. 2001/0031920) in view of Saito et al. (U.S. Patent No. 6,826,297) as applied to the claims above, and further in view of Carroll et

al. (U.S. Patent No. 6,501,848). Claims 14 and 15 depend indirectly from claim 1 and therefore inherit the elements of claim 1. Claims 53-54 depend indirectly from claim 40. As argued above, neither Kaufman nor Saito teach or suggest maintaining two sets of values that are used to render segmented and non-segmented data. Rather, both Kaufman and Saito use various forms of mapping values rather than maintaining two sets of values. Further, Applicant has reviewed Carroll and can find no teaching or suggestion of maintaining two sets of values that are used to render segmented and non-segmented data. As a result, neither Kaufman nor Saito nor Carroll, alone or in combination, teach or disclose each element of claims 14-15 and 53-54 as inherited from claims 1 and 40 respectively. Applicant respectfully requests reconsideration and the withdrawal of the rejection of claims 14-15 and 53-54.

Reservation of Rights

In the interest of clarity and brevity, Applicant may not have addressed every assertion made in the Office Action. Applicant's silence regarding any such assertion does not constitute any admission or acquiescence. Applicant reserves all rights not exercised in connection with this response, such as the right to challenge or rebut any tacit or explicit characterization of any reference or of any of the present claims, all inherency assertions, the right to challenge or rebut any asserted factual or legal basis of any of the rejections, the right to swear behind a cited reference such as provided under 37 C.F.R. § 1.131 or otherwise, or the right to assert co-ownership of a cited reference. Applicant does not admit that any of the cited references or any other references of record are relevant to the present claims, or that they constitute prior art. To the extent that any rejection or assertion is based upon the Examiner's personal knowledge, rather than any objective evidence of record as manifested by a cited prior art reference, Applicant timely objects to such reliance on Official Notice, and reserves all rights to request that the Examiner provide a reference or affidavit in support of such assertion, as required by MPEP § 2144.03. Applicant reserves all rights to pursue any cancelled claims in a subsequent patent application claiming the benefit of priority of the present patent application, and to request rejoinder of any withdrawn claim, as required by MPEP § 821.04.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6954 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 29 day of May, 2007.

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